


FOREIGN ANIMAL
DISEASES REPORT

JANUARY 1976

## MUNICH HOSTS THE THIRD INTERNATIONAL WILDLIFE DISEASE CONFERENCE

The Third International Wildlife Disease Conference, sponsored by the Wildlife Disease Association, was held at the Institute of Zoology and Hydrobiology, Veterinary Faculty, University of Munich on August 26-29, 1975. More than 130 scientists representing a variety of disciplines participated in the program.

There was considerable emphasis on wildlife aspects of important contagious diseases of livestock and poultry. Foot-and-mouth disease, rinderpest, malignant catarrhal fever, bluetongue, dermatophilosis, African swine fever, exotic Newcastle disease, fowl pest, and others were discussed.

Attention by veterinary officers has traditionally been given to diseases spreading from wildlife populations to livestock and poultry, which occurs in some diseases such as African swine fever. Evidence is growing that the reverse may be the case in at least one major livestock disease - rinderpest. With successful control of the disease in livestock of large areas of Africa, wild ungulates are no longer seen affected with rinderpest. Great population increases of susceptible game animals have occurred in some areas, leading experts to believe that livestock - cattle and domestic buffalo - were the disease reservoir for game.

Work on the newly discovered San Miguel sea lion virus (SMSV), isolated from sea lions off the coast of California, was presented. This virus closely resembles that of vesicular exanthema of swine (VESV), the only livestock disease believed to have become extinct in the world with its eradication from the United States in 1959. Now there is speculation that VESV may have been a "land variant" of the SMSV present in marine mammals.

Examples of how important disease can be in wildlife management were given. White-tailed deer, Odocoileus virginianus, for instance, harbor two elaphostrongyline lungworms, viz. Parelaphostrongylus tenuis and P. andersoni. Parelaphostrongylosis presents perhaps the major management problem in moose in eastern North America. This disease, in addition to being responsible for serious declines in moose populations over substantial areas, has negated numerous stocking programs involving caribou, elk, and reindeer.

In addition to diseases of domestic species, Emergency Programs is concerned about the disease interrelationship between domestic and wild animals, and poultry and free-flying birds. Information presented at the Third International Wildlife Disease Conference will assist us in preparing for that time when our Regional Emergency Animal Disease Eradication Organizations (READEO) may have to go into action.

Following the conference, Emergency Programs principal staff officer for Wildlife visited Austria and was privileged to receive a personal tour and explanation of management techniques as utilized in game management areas by a representative of the General Directorate of Austria's Federal Forest Service.

## THE EPIDEMIOLOGY OF THE HOG CHOLERA OUTBREAK-HEREFORD, TEXAS, 1975

The presence of hog cholera (HC) in Hereford, Texas, was identified by the Texas State Diagnostic Laboratory, College Station, Texas, and was subsequently confirmed by the Veterinary Services Laboratory (VSL) on July 4, 1975. The last known outbreak of HC in Texas was on May 2, 1973, at Progreso, approximately 575 miles by air southeast of Hereford.

The HC outbreak occurred in a livestock market dealing in swine and cattle since 1954. The market maintained a revolving herd consisting of all classes of swine until July 5, 1975, when it was depopulated. Swine were continuously added and removed from the herd for marketing purposes. Marketing was for puchase, sale, trade, lending, breeding, and feeding to, within, and out of the herd. The trade area for the market was predominately within a 50 mile radius of Hereford, but occasionally extended to 100 or more miles. Usually the operation purchased swine locally and sold slaughter swine through a stockyard in Oklahoma City. Light swine were fed out on the premises. Significant transactions included feeder and breeder classes to local producers. Swine moving through the market were not identified individually or by herd of origin. There were no specific market records. Only through the cooperation of owner, bank statements and check draft records, were marketing movements traced.

Epidemiological investigation revealed the date of first sickness as June 9, 1975, and the first death on June 12. Sickness appeared first in a lot of approximately 100 head weighing from 160 to 210 lbs. in a pen used for fattening. The lack of favorable response to owner administered antibiotics resulted in the request for veterinary treatment on June 19, 27, and 28. The clinical symptoms were indicative of moldy corn toxicosis, erysipelas or salmonellosis. On June 28, the private veterinary practitioner submitted tissues to the Texas Veterinary Medical Diagnostic Laboratory (TVMDL) at College Station, Texas. Along with the requested tests, a routine fluorescent antibody tissue section (FATS) screening test for HC was conducted and was positive. The index tissues plus additional specimens collected from two more sick swine on the premises were sent to the VSL, Ames, Iowa, were positive for HC on July 4, 1975. By July 5, all swine were depopulated at the Auction Company.

As a matter of routine practice, while the HC progressed in the feeding herd, the owner sorted heavy butcher swine and shipped them to Packing House A in Oklahoma City, Oklahoma. Lighter swine of the same group were sorted and placed in various pens on the premises. By July 3, there were 27 large feeders surviving the disease located in the sickpen. The owner believed at least 15 head died because of HC. Various classes of swine were sold to the stockyards in Oklahoma City in the meantime. Most of these were slaughtered, but lighter hogs found their way back to farms in Oklahoma. One hundred square mile State and Federal quarantines were placed on portions of Deaf Smith and Castro Counties, Texas, on July 10, 1975.

Herds receiving swine from the livestock company after May 1st were considered exposed. The date was determined adequate to cover extended incubation periods. The exposed herds (24 in Texas and six in Oklahoma) were depopulated, and samples collected were examined for HC. Only one herd revealed serology positive for HC. This herd received swine from the Auction Company on May 24 and June 12, 1975.

The stockyards in Oklahoma City received 13 shipments between May 1 and July 5, 1975, from the affected market. One packing house received 16 direct shipments. All exposed swine were successfully traced to slaughter or to another herd and were depopulated. Fifty-eight herds receiving swine from the stockyard in Oklahoma City were placed under close surveillance until they were considered free of infection. An additional 30 herds were investigated at owner request because of the HC outbreak.

The affected livestock market received swine from 229 different sources from April 1-July 5, 1975. Sampling in 198 herds of origin was conducted. Of the remaining herds of origin, 20 herds no longer had swine and 11 herds could not be located. All tested herds were negative except one in the Hereford, Texas, area. It was depopulated because of the high serum neutralization titers and history of clinical HC. Post mortem specimens revealed splenic infarcts from three swine, and one brain was compatible with HC on histopathology. This herd sold swine to the affected market on May 7, 28, and 31, 1975. The history supports the likelihood that the May 28 shipment carried HC to the livestock market. It was, therefore, concluded that his herd was the most probable source of infection for the affected market. No source of infection for this herd was identified in spite of intensive epidemiological efforts.

Animal inoculation of Specific Pathogen-Free (SPF) pigs at VSL demonstrated the HC virus isolated from infected swine was highly virulent.

In addition to animal movements in Texas, Oklahoma, and New Mexico area, there were movements of products and/or swine to other interstate and international locations. There were three major stockyards, twelve meat packing companies, and five order buyers involved in the sales of swine and/or pork products to 26 States, Puerto Rico, Great Britain, and Japan. Great Britain embargoed the importation of pork from the United States to protect its swine population from HC.

Discussion: Cases of HC in areas determined free of the disease may be due to one of the following: (1) Existing Reservoir Hosts - Since swine are the only susceptible species, there are no known reservoir hosts for HC; (2) Swine Carrier Animals - This was ruled out by extensive sampling of negative herds in the geographic and trade area; (3) Reintroduction of the Disease - Epidemiological information obtained supported the conclusion that HC was recently introduced. Purchase of swine may have brought the infection into the herd. All known sources were traced to no avail. An accurate history was obscured by the passage of time. Husbandry, management practices, and physical facilities in the area were not optimum. The question of international movement could not be supported or denied. It is known there is a need for unskilled labor for cattle feedlots and truck farming. Some transients were known to own swine. Swine and swine products move regularly from the

lower Rio Grande Valley to this area. All known movements were traced with negative results; (4) Vaccine - There was no evidence to support the illegal use of hog cholera vaccine in the Hereford area by interview or serology; (5) Garbage - Even though garbage is fed in the area, epidemiological investigation could not establish it as a source of infection. State and Federal regulatory personnel conducted surveillance in the Hereford area for 90 days to assure that HC had been eradicated. This included a serum-survey of selected slaughtering plants and buying stations. In addition, contacts of rendering plants and private veterinary practitioners for indications of HC were made. All suspicious cases were investigated by regulatory personnel and laboratory specimens were submitted when indicated.

## DEER DIE-OFF OCCURS IN NEW JERSEY

An extensive die-off of white-tailed deer (Odocoileus virginianus) occurred this fall in New Jersey due to epizootic hemorrhagic disease (EHD). New Jersey Fish and Game personnel reported finding 374 dead deer during the die-off, but estimate that mortality probably came close to 1,000 animals.

The losses were predominantly among does which are more prevalent in the affected area due to the management practice of regulating fall hunting so that bucks are harvested at a heavier rate than does. Actually, the disease affected both sexes and all ages. Reports indicated that other resident wildlife species were not affected.

The die-off caused considerable concern among livestock owners in the affected area when simultaneous reports of possible cattle, swine, and sheep involvement were received. A Veterinary Services foreign animal disease diagnostician was sent to the area to investigate the possible involvement of livestock and to assist and coordinate activities with New Jersey Fish and Game personnel.

Affected deer at necropsy had enlarged livers, petechial and ecchymotic hemorrhages on the serosal and mucosal surfaces of the rumen complex, heart, intestinal tract, and other body organs. Tissue specimens obtained from several deer and sera from the herd of cattle which had been experiencing losses were sent to Veterinary Services Laboratories, Ames, Iowa.

Several of the cattle had serum antibody titers for EHD and bovine virus diarrhea and one cow had a titer of 1:32 for bluetongue (BT). Deer material submitted from the die-off area was inoculated into three sheep and a fawn and yearling white-tailed deer.

The inoculated deer developed elevated body temperatures, anorexia, and clinical signs consistent with those described in the literature for either BT or EHD viral infection in white-tailed deer. Both deer succumbed to the disease 9 and 14 days post inoculation. On necropsy, extensive hemorrhaging was noted. Material from the inoculated deer was injected into domestic sheep with negative results for BT. Blood samples and tissues obtained from the inoculated deer were also negative for BT. On December 2 and 8, 1975, positive virus isolations for EHD were made from the original specimens submitted by the New Jersey Fish and Game Commission Station, Clinton, New Jersey. EHD virus was also isolated from one bovine sample submitted from the same area.

EHD has been responsible for several significant epizootics in deer in the southeastern United States. The occurrence and identification of EHD was first reported in 1955 in white-tailed deer in New Jersey where approximately 700 deer died.

Because of the clinical similarities between EHD and the various vesicular diseases, including foot-and-mouth disease, in deer, it is essential that this species, as well as other species of wildlife, be monitored at all times.

Good lines of communication and cooperative endeavors between State and Federal Wildlife Agencies and animal health officials are considered essential in any exotic animal disease eradication program.

## FOREIGN ANIMAL DISEASE SURVEILLANCE

The establishment and maintenance of an effective National foreign animal disease surveillance program is one of the most important responsibilities of State and Federal animal health officials. It does not matter how elaborate the plans and organization may be for the control or eradication of a disease, the amount of manpower available or the laboratory diagnostic capabilities if the disease is not reported for 30-45 days and it has spread extensively. It is most important to determine the presence of a disease before it has time for spread through livestock, people, or vector movements. Effective disease eradication is directly related to how rapidly the condition is reported and diagnosed.

The channels for reporting suspicious exotic diseases are well established. To expedite action on suspicious cases, they must immediately be reported to the State veterinarian of the State where the condition is occurring or to the Area or District Veterinarian of Veterinary Services. These officials will immediately dispatch a foreign animal disease diagnostician, a veterinarian who is specially trained in the recognition of exotic diseases, to make an investigation.

During FY 1975, 52 investigations of suspicious cases of foreign animal diseases involving 30 trained foreign animal disease diagnosticians were conducted. These 52 investigations which do not include those conducted for suspicious reports of exotic Newcastle disease and Venezuelan equine encephalitis were conducted in 49 counties of 22 States. There were 48 of these investigations suspicious for vesicular conditions. All 52 investigations were negative for exotic diseases.

Two cows on a premises in Columbus County, North Carolina, were positive for New Jersey vesicular stomatitis. Forty-three swine on the same premises were negative for vesicular stomatitis.

The animal which revealed a healing lesion was an 18 month old heifer. Paired sera collected approximately 3 days apart from this animal were positive at the 1:8 and 1:10 dilutions for New Jersey vesicular stomatitis by the complement-fixation test. The serum neutralization test was positive for New Jersey vesicular stomatitis at the 1:512 dilution.

In contrast, during FY 1974, foreign animal disease surveillance activities resulted in 90 investigations which excludes those conducted for exotic Newcastle

disease and Venezuelan equine encephalitis which have been reported previously. Of these 90 investigations, 82 were suspicious for vesicular conditions. All were negative for exotic diseases. Five cases, all in bovine, were positive for New Jersey vesicular stomatitis. Two cases occurred in Concordia Parish, Louisiana, and single cases were confirmed in Washington and Evangeline Parishes, Louisiana, and Warren County, Mississippi.

Figure 1 depicts the investigations conducted in FY 1975.

During FY 1975, in cooperation with the Plum Island Animal Disease Center, (PIADC), Agricultural Research Service (ARS), 31 veterinarinas were trained as foreign animal disease diagnosticians. Participants included veterinarians from the military as well as State and Federal regulatory agencies. In addition, veterinarians from three other countries have participated.

The foreign animal disease diagnosticians have the responsibility for conducting surveillance of the United States for foreign animal diseases and making investigations of suspicious cases. As of October 1, 1975, 159 veterinarians had completed the course and were available to make investigations.

Currently, two foreign animal disease courses consisting of approximately 24 participants are held annually in cooperation with the PIADC, ARS. Beginning in FY 1977, plans provide for increasing this training to three courses annually.

During FY 1975, the development of films of 10 foreign animal diseases was initiated in cooperation with the PIADC. These films are directed primarily toward professional audiences but will be useful in increasing public awareness of foreign animal diseases.

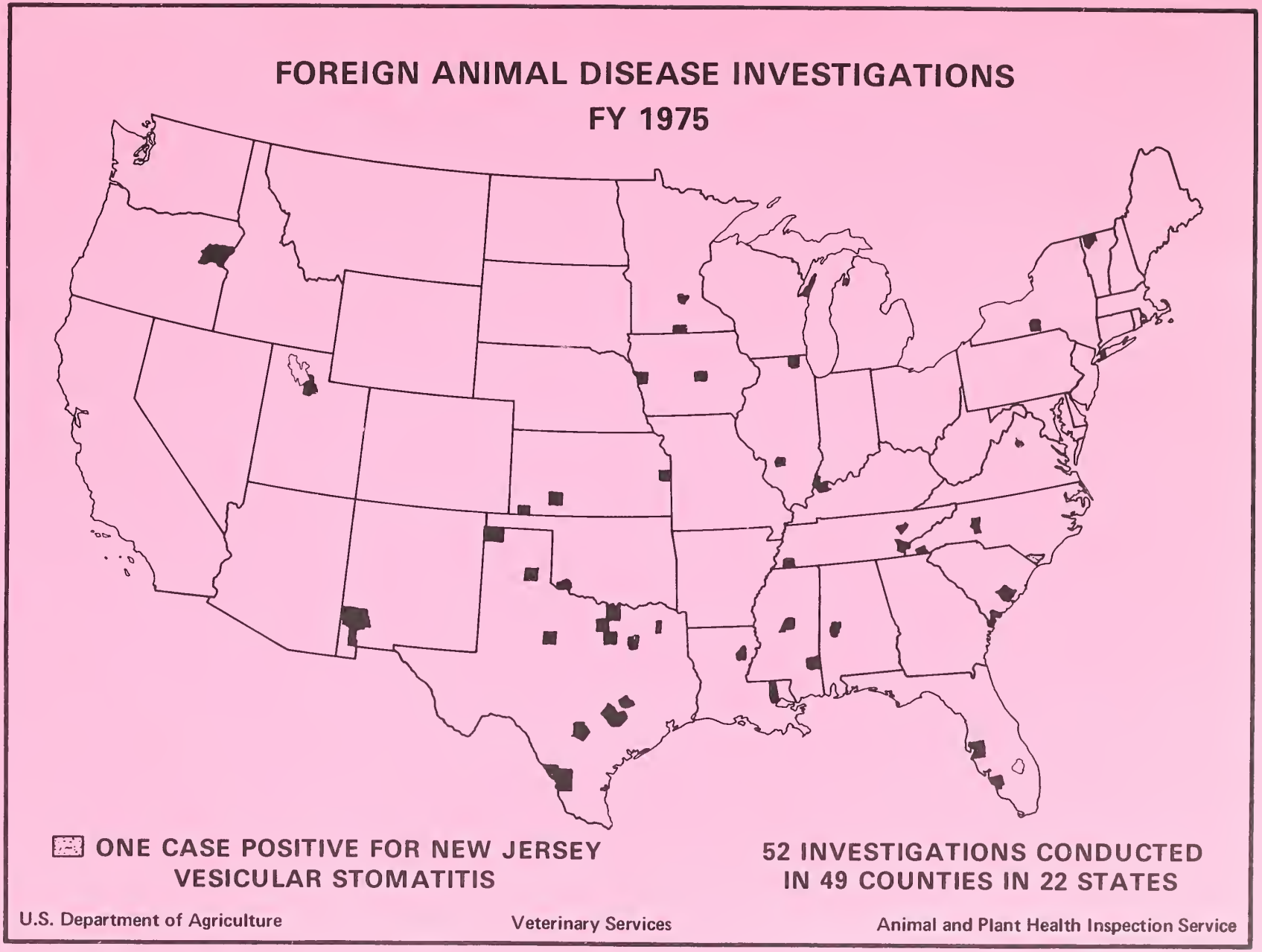
Preparedness for Dealing with Emergency Diseases: During FY 1975, the five Regional Emergency Animal Disease Eradication Organizations (READEO's), which are standby organizations designed to effectively deal with outbreaks of emergency diseases, were fully staffed and maintained to rapidly respond to emergency disease outbreaks. The Northern and South Central READEO's were activated to combat outbreaks of exotic Newcastle disease at Bay Shore, Long Island, New York, and Pharr, Texas, respectively. These outbreaks were rapidly and effectively eliminated. Three test exercises were conducted by the North Central, Northern, and Western READEO's.

In addition, a formal request by the Secretary of Agriculture to the Secretary of Defense for extending contingency planning and support of the READEO activities to include Puerto Rico, Hawaii, Alaska, Panama Canal Zone, and the Trust Territories of the Pacific Islands, Guam, American Samoa, Virgin Islands, and the Johnston Islands, was approved.

A list of disease specialists who will be available to serve as advisors and consultants for the five READEO's during disease outbreaks is being established.

The County Profile System, which will play a vital role in the epidemiology of outbreaks of emergency diseases and in the operation of the READEO's has recently been expanded and updated. Currently there are 24 categories of information consisting of over 35,000 entries. The locations by county and the livestock
(Continued on page 8)

FIGURE I


FOREIGN ANIMAL DISEASE INVESTIGATIONS
FY 1975
ONE CASE POSITIVE FOR NEW JERSEY VESICULAR STOMATITIS
52 INVESTIGATIONS CONDUCTED IN 49 COUNTIES IN 22 STATES
U.S. Department of Agriculture
Veterinary Services
Animal and Plant Health Inspection Service

populations are covered in these categories. These categories include information on the number and location of livestock markets, cattle, pigs, sheep, chickens, horses, goats, meat slaughtering establishments, poultry slaughtering establishments, rendering facilities, cold storage warehouses, boning plants, processing plants, feedlots, dairy products, veterinary biologics producers, animal disease diagnostic laboratories, hatcheries, livestock dealers, federal regulatory veterinarians animal products, and big game animals.

The Animal Protein Conservation Work Group, which was established to determine safe methods and procedures for salvaging meat and animal products during an outbreak of an exotic disease, completed its study and a final report was issued. If an outbreak of an exotic disease should occur in a major livestock producing area with a high population density the subsequent loss of animal protein might seriously reduce the nation's food supply. Based on the possibility of such an occurrence, the work group studied alternative methods that could be used to stamp out disease outbreaks and yet conserve animal protein.

Animal protein conservation would involve processing the retrievable protein in such a way as to (1) Make the finished product safe for human or non-human consumption, and (2) Assure that the finished product could not transmit the disease to other susceptible animals. Foot-and-mouth disease, considered to be the most devastating of the exotic diseases, was selected as the model to relate to during the deliberations of the work group. After extensive study, the work group concluded that the existing facilities for transportation, slaughter, processing, rendering, and storage are not adequate to make conserving animal protein a realistic economic alternative to the current methods of disposal of exposed animals. Many factors were enumerated that indicated the need for further technological development. These deliberations should be periodically reviewed in the light of possible changes in the national and world food supply, economics, and the future development of the new technology that this report recommends. Many of these technological developments are reasonably attainable and future prospects for protein conservation appear feasible.

## "INFORMATION ON THE FOOT-AND-MOUTH DISEASE INSTITUTE OF ANKARA"

Dr. M. Suphi Cetin, Director-General
Veterinary Services
Ankara, Turkey


The Foot-and-Mouth Disease Institute of Turkey, located near Ankara, is an organization working under the Ministry of Food-Agriculture and Livestock. Upon the directives of the Ministry, the Institute produces inactive and concentrated vaccines of monovalent, bivalent, and trivalent types of foot-and-mouth disease (FMD), depending on the types of viruses presently seen in the country or that may possibly occur in the future. The Institute also carries out determination of the virus types of samples collected in the country and, also considerable amounts of immunological and serological studies are done. Research is carried out on many subjects relating to the problems of FMD.

At present, about 8-10 million doses of monovalent vaccines are produced annually. To increase vaccine production to an industrial level, construction of a new laboratory has started which will increase the annual vaccine production to about 90 million monovalent doses.

Vaccine virus is produced by three methods: (1) Frenkel, (2) Tissue Culture monolayer, (3) Cell suspension culture.

The Institute has been organized mainly into nine sections: (1) Serology, (2) Immunology, (3) Cell Suspension Culture, (4) Frenkel Procedure, (5) Tissue Culture Monolayer, (6) Vaccine Production, (7) Media Preparation, (8) Vaccine Control, and (9) Workshops.

There are about 140 personnel, of which 18 are veterinarians, working at the Institute.

Special Fund projects are being carried out in cooperation with the Food and Agriculture Organization, which have been supported by the United Nations Development Program for the last 6 years.

In July of 1974, Veterinary Services of the Animal and Plant Health Inspection Service, assigned a veterinarian to the Turkish Veterinary Directorate to work on FMD for a period of 2 years. He participates in various sections of the laboratory, such as vaccine production and control, Frenkel section, Tissue Culture Monolayer, Baby Hamster Kidney (BHK) Suspension, and the other sections. He travels with the laboratory personnel to FMD outbreaks in the field when they are called to participate. He participates in field trials of new vaccines, observes the FMD research being conducted by Turkish and FAO personnel as well as the work being carried in other animal disease laboratories, veterinary faculties, and State research farms in Turkey.

Editorial note: Dr. Cetin, the Turkish Veterinary Director-General, who prepared this article was very modest. It should be pointed out that because of Turkey's geographical position, it serves as a major communication area in the movement of animal diseases from both Asia and Africa. As a result, Turkey's veterinary profession has a long and impressive history of dealing with diseases normally exotic to Turkey and Europe, including rinderpest, African horsesickness, and the subtypes of FMD $SAT_1$, $A_{22}$, and $Asia_1$. We are pleased to have one of our senior animal health scientists collaborating with them.

## FOREIGN ANIMAL DISEASE DATA BANK

Emergency Programs has established a data bank on foreign animal diseases, as reported in previous Foreign Animal Diseases Reports.

The goal is to obtain all published information on some 30 foreign animal diseases, have it read and coded, then put into the data bank in a rapidly retrievable form. The diagram illustrates the method which is used to add articles to the system.

Citations of articles are obtained from bibliographies, review articles, and computerized abstracting tapes. The citations are checked against the data bank

file, then requests for the articles are made through the national inter-library system. If an article is in a foreign language, an attempt is made to secure an English translation.

The articles are then read and key words, or concepts, are identified in the article by coders who have at least a 4 year college degree in the biological sciences. These keywords are then assigned a six-digit code number from the Animal Diseases Index. Keywords, with their code number, are entered onto a code sheet form.

The codes are entered on microfilm and the code sheet and the articles then microfilmed at a reduction of 24:1. This allows about 100 articles of a given disease on each roll of film.

All coded information for each article is also keypunched and entered into a computer. The computer will provide a bibliography of all articles in the data bank, including author, source, and title of each article. Searches for specific information can then be made with the computer which will provide a list of articles containing the desired information. The articles may then be rapidly retrieved from the microfilm system.

Microfilmed articles are kept in film magazines labeled by type of disease and identification number of articles included. To retrieve information, a requester can refer to a computer listing (bibliography) and then retrieve specific articles from the microfilm retrieval terminal by number. The microfilm retrieval unit can also be used to search all articles pertaining to a particular subject. After inserting a microfilm magazine into the retrieval terminal, the searcher enters code numbers on a keyboard and presses a search button. In seconds, the retrieval terminal locates the images of the desired article and displays them on the terminal screen. A print of each page of the article can then be made in seconds.

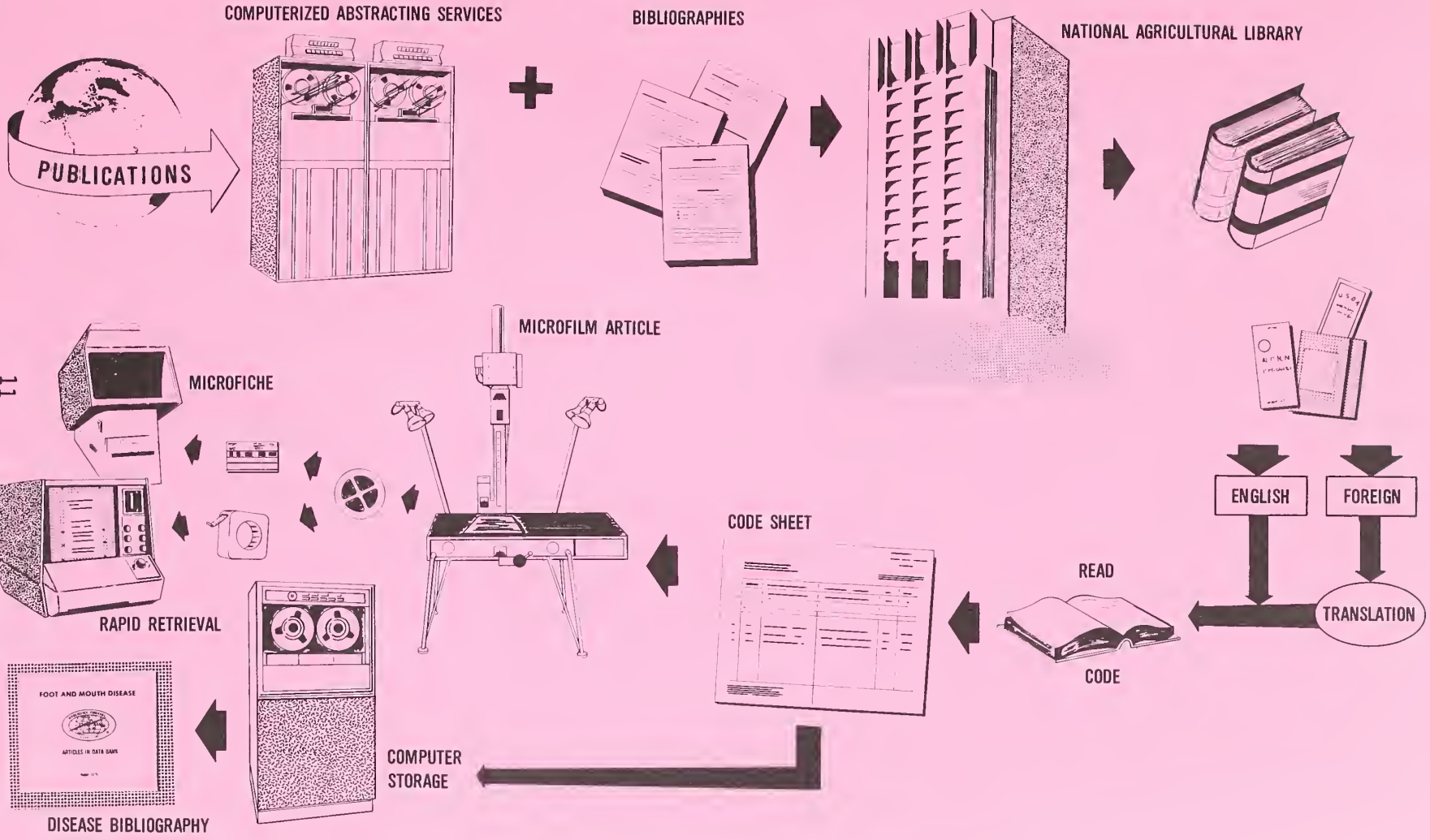
A copy of the desired article can be sent by mail or over the telephone lines in four minutes by the use of a telecopier to a receiving telecopier.

The data bank at this time contains over 8,000 articles covering the following diseases: Foot-and mouth disease; Newcastle disease; swine vesicular disease; hog cholera; African swine fever; San Miguel sea lion virus; Venezuelan equine encephalomyelitis; and vesicular exanthema of swine. Trypanosomiasis is presently being added to the data bank.

Bibliographies of the articles in the data bank are now available for African swine fever; foot-and-mouth disease, Newcastle disease; and swine vesicular disease.

Anyone desiring additional information should write to:
Director, Emergency Programs, Veterinary Services, Federal Building, Hyattsville, Maryland 20782.

# OPERATION OF EMERGENCY PROGRAMS DATA BANK



## WORLD DISEASE REPORTS*

| Country | Date 1975 | New Outbreaks | Country | Date 1975 | New Outbreaks |
|---|---|---|---|---|---|
| **Foot-and-Mouth Disease** | | | | | |
| Argentina | June 1-30 | 161 | Lebanon | July 1-31 | 3 |
| Columbia | July 1-31 | 17 | Mozambique | March 1- April 30 | 2 |
| Ecuador | July 16-Aug. 31 | 20 | Paraguay | August 9-22 | 3 |
| Hong Kong | August 1-31 | 2 | Rhodesia | July 1-31 | 1 |
| India | April 1-30 | 144 | Thailand | Feb. 1-March 31 | 10 |
| Iran | August 1-31 | 3 | Togo | February 1-28 | 2 |
| Iraq | August 16-31 | 6 | Tunisia | July 1-31 | 2 |
| Italy | Aug. 1-Sept. 15 | 8 | Turkey | July 16-Aug. 31 | 79 |
| Jordan | April 1-June 30 | 782** | Uruguay | July 5-Aug. 22 | 84 |
| Kenya | June 1-30 | 5 | U.S.S.R. | July 1-31 | 20 |
| **Rinderpest** | | | | | |
| India | April 1-30 | 41 | | | |
| **Contagious Bovine Pleuropneumonia** | | | | | |
| Ghana | July 1-31 | 9 | South Africa | July 1-31 | 2 |
| **Sheep Pox** | | | | | |
| India | April 1-30 | 9 | Kenya | June 1-30 | 1 |
| Iran | August 1-31 | 9 | Tunisia | July 1-31 | 1 |
| Iraq | August 16-31 | 20** | U.S.S.R. | July 1-31 | 1 |
| **Dourine** | | | | | |
| South Africa | July 1-31 | 1 | | | |
| **African Swine Fever** | | | | | |
| Portugal | August 1-31 | 20 | South Africa | July 1-31 | 1 |
| Spain | June 1-August 15 | 116 | | | |
| **Swine Vesicular Disease** | | | | | |
| Austria | July 16-31 | 1 | | | |

( *Extracted from International Office of Epizootics, Monthly Circular #345).
(**Cases).